City of Sultan Water Treatment Plant:

Improvements to Expand Capacity and System Safety, Reliability and Resiliency For a 2-MGD Treatment Plant

Presented by:
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Nate Morgan – City of Sultan – Public Works Director

Agenda

01 Background and Existing Facility

02 Expansion of Treatment Capacity

03 Other Plant Improvements

04 Funding

05 Proposed Schedule

06 Q&A

City of Sultan

- Incorporated in 1905 and acquired watershed in 1908
- Population 5,900
- 3% annual growth
- 2,000 gpm water right from artesian spring source impounded by Lake 16 Dam/Transmission Main - 2.5 miles North

Background

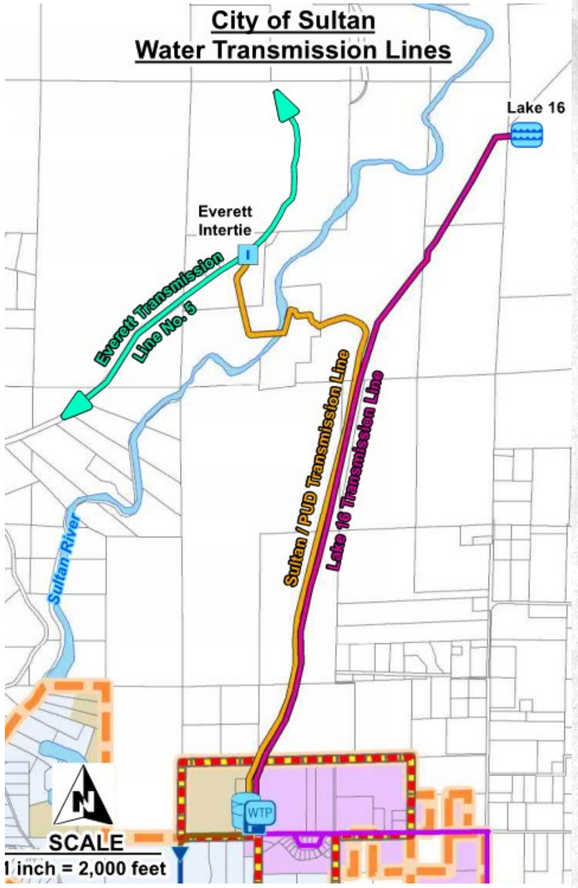
Existing Water Treatment Plant

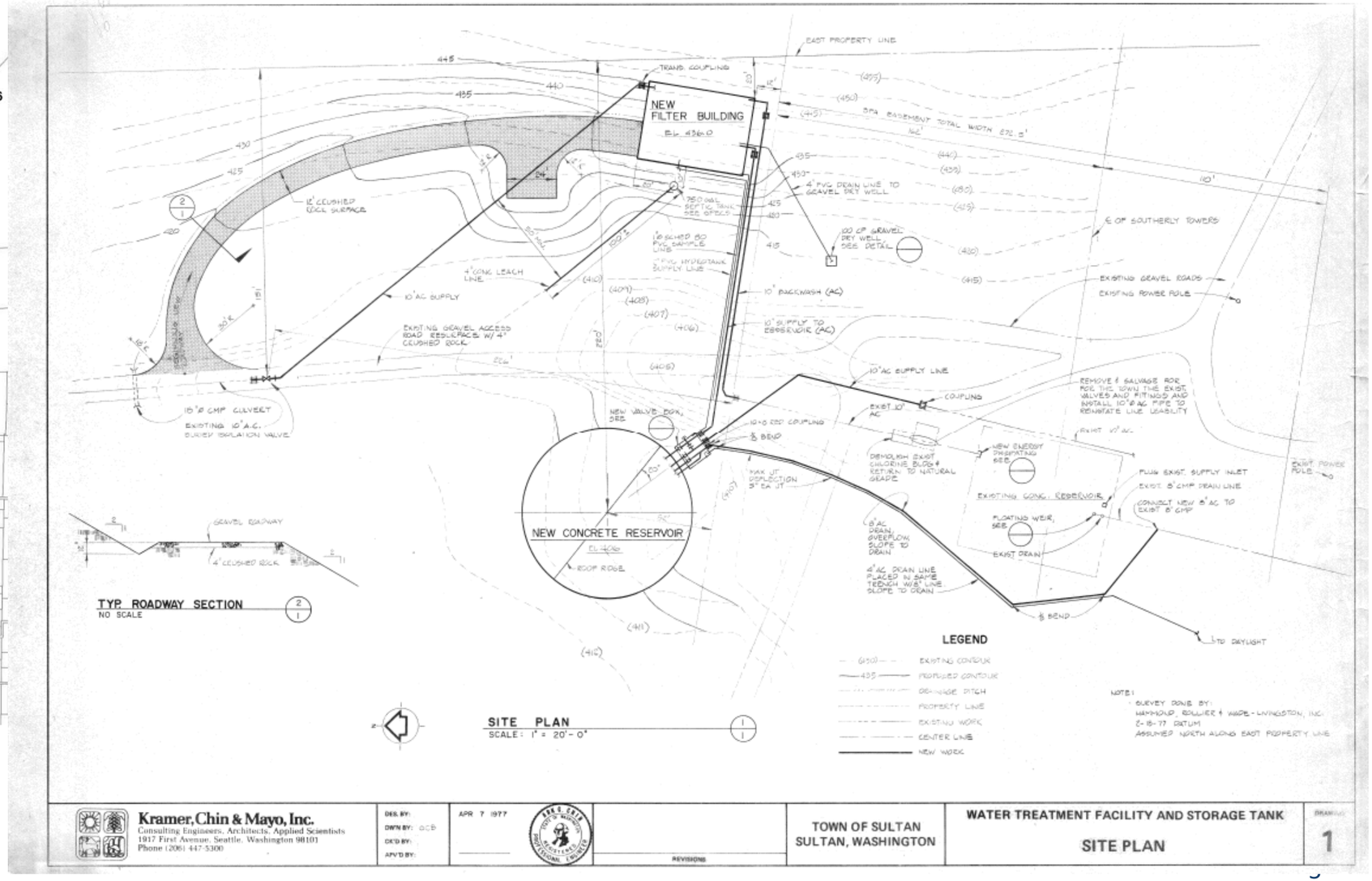
Background

- Constructed 1977
- Expanded to 944 gpm (1.36 MGD) in 2000
- Upflow clarifier followed by dual media filtration
- Reservoirs – 1.0 MG and 1.5 MG
- Everett Intertie

Existing Water Treatment Plant

Background





Existing Water Treatment Plant

- Gravity flow, high quality source water
- Original reservoir, now backwash pond, 1950s
- 1 MGD plant (dual media gravity sand filters), 1.0 MG Reservoir constructed 1977
- 1.5 MG reservoir constructed 1998
- Stand-alone pretreatment adsorption upflow clarifier with buoyant media – USFilter MicroFloc AC-70 added in 2000
- New booster station in 2015 – backwash supply from fire flow pumps

Background

Existing Water Treatment Plant

Background

Capacity Expansion

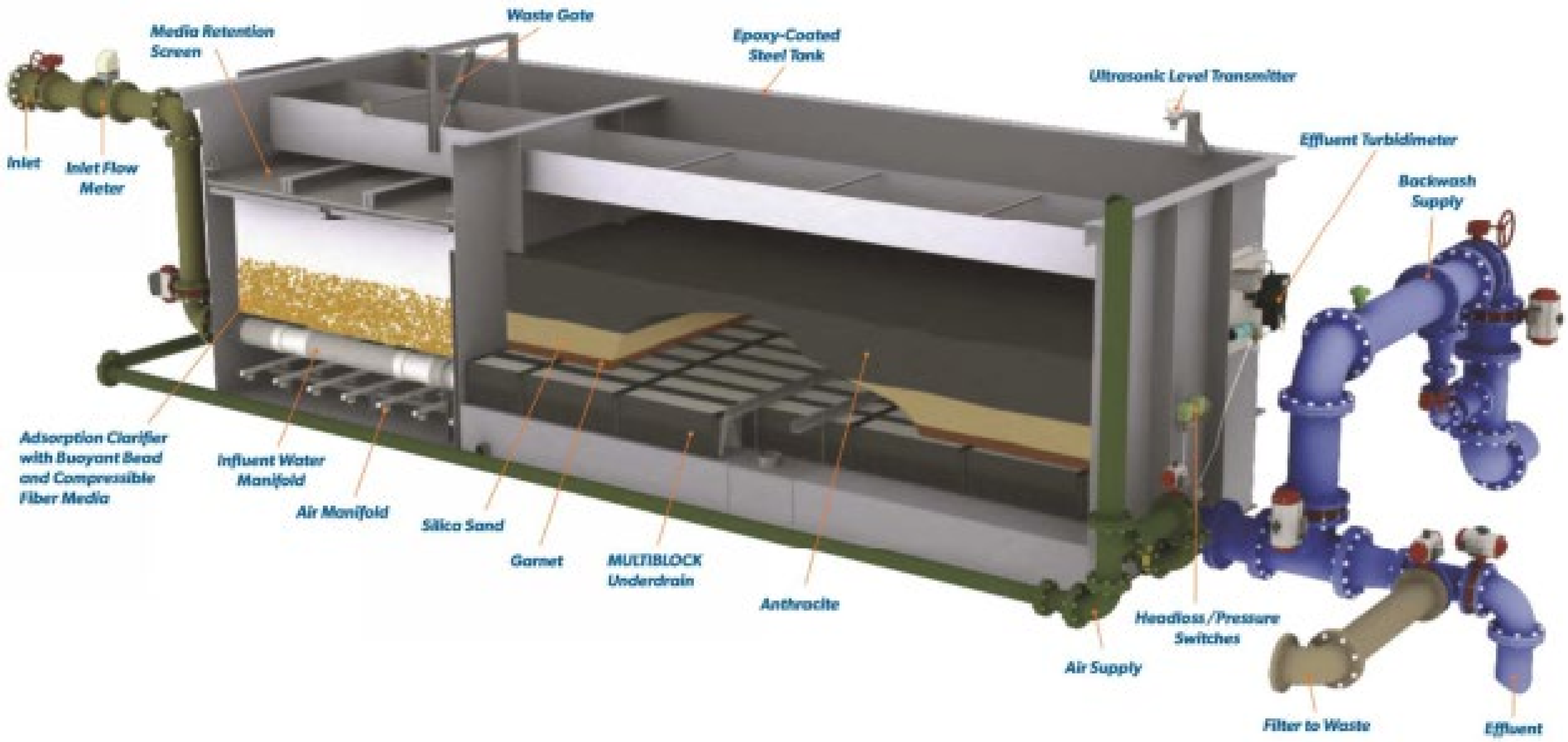
Expand Treatment Capacity

- Increase treatment capacity from 944 gpm to 1,400 gpm
- Future expansion to full water right - 2,000 gpm
- Two-stage WesTech Trident packaged treatment system
- Two trains –700 gpm each

Capacity Expansion

Packaged Treatment System

Complete Package Plant



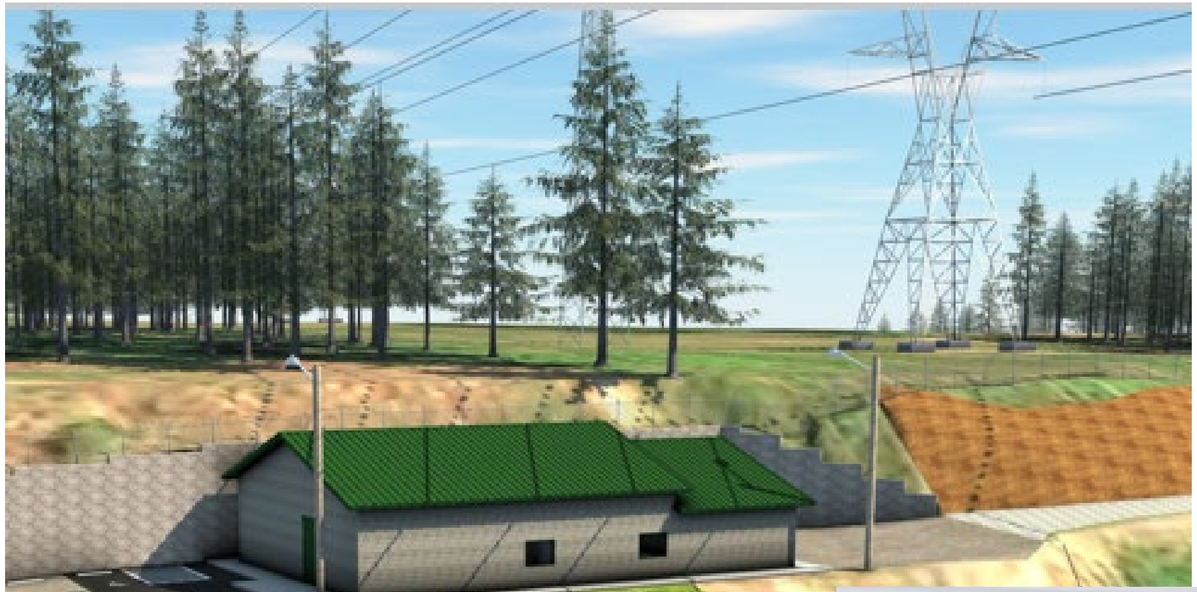
Other Plant Improvements

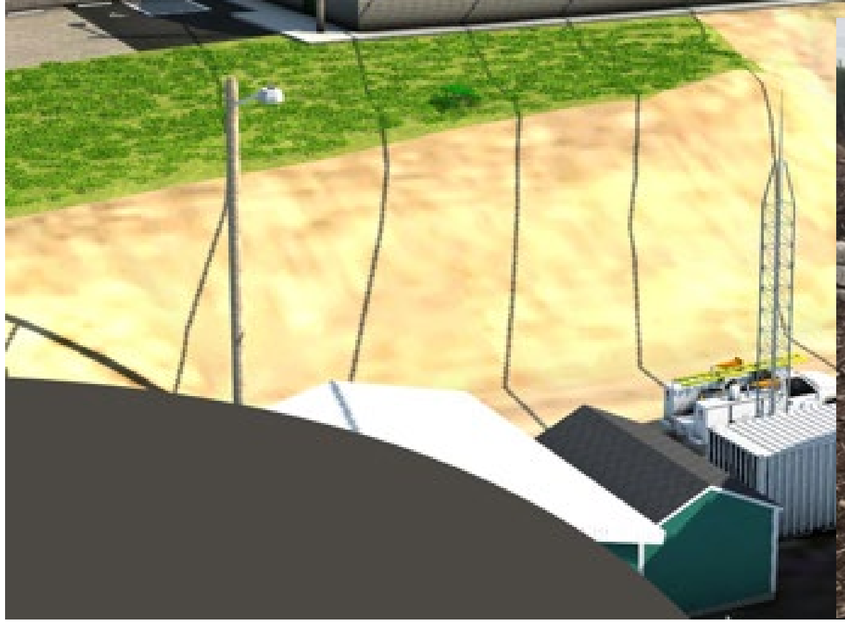
- New WTP building
- Replace AC yard piping
- Upsize yard piping to accommodate 2,000 gpm
- Connect to sanitary sewer
- Backwash upgrades
- Seismic valves on reservoirs
- Site security

Plant Improvements - Building

Site Improvements

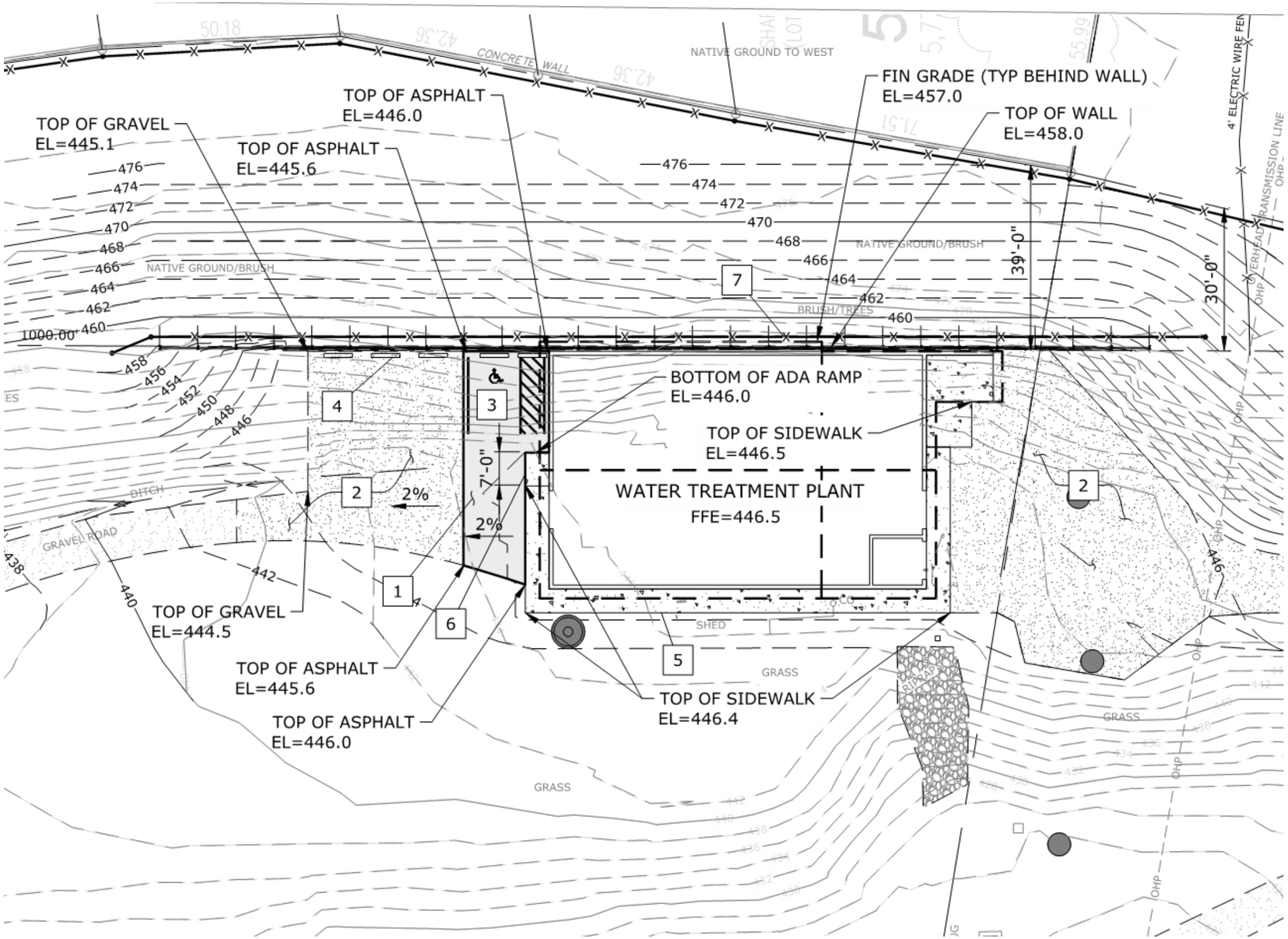
Plant Improvements - Building





Plant Improvements - Building

Site Improvements



Plant Improvements

Existing Backwash System

- Existing 125 hp backwash supply/fireflow pumps installed in 2015 in new booster station
- Backwash pond – former reservoir pre-1977, approximately 138,000 gallons
- Single backwash waste pump, 7.5 hp
- Backup gravity backwash line
- Backwash to sprinkler system in forest

Plant Improvements

Backwash Improvements – Rates/Quantities

Waste source	Frequency (hours)	Duration (minutes)	Waste generated per cycle (gallons)	Current Flow Rate (gpm)	Current Volume waste generated per day	Proposed Flow Rate (gpm)	Proposed Volume waste generated per day
Filter Backwash	12	15	42,750	950	85,500	2,300	138,000
FTW	12	15	10,500	700	21,000	700	42,000
AC flush	3	13	9,100	700	72,800	700	145,600
Total					179,300		325,600
Storage Capacity (hours)					18.5		10
Filter Backwash	20	15	42,750	950	51,300	2,300	82,800
FTW	20	15	10,500	700	12,600	700	25,200
AC flush	3	13	9,100	700	72,800	700	145,600
Total					136,700		253,600
Storage Capacity (hours)					24.2		13.1

Backwash Improvements - Supply

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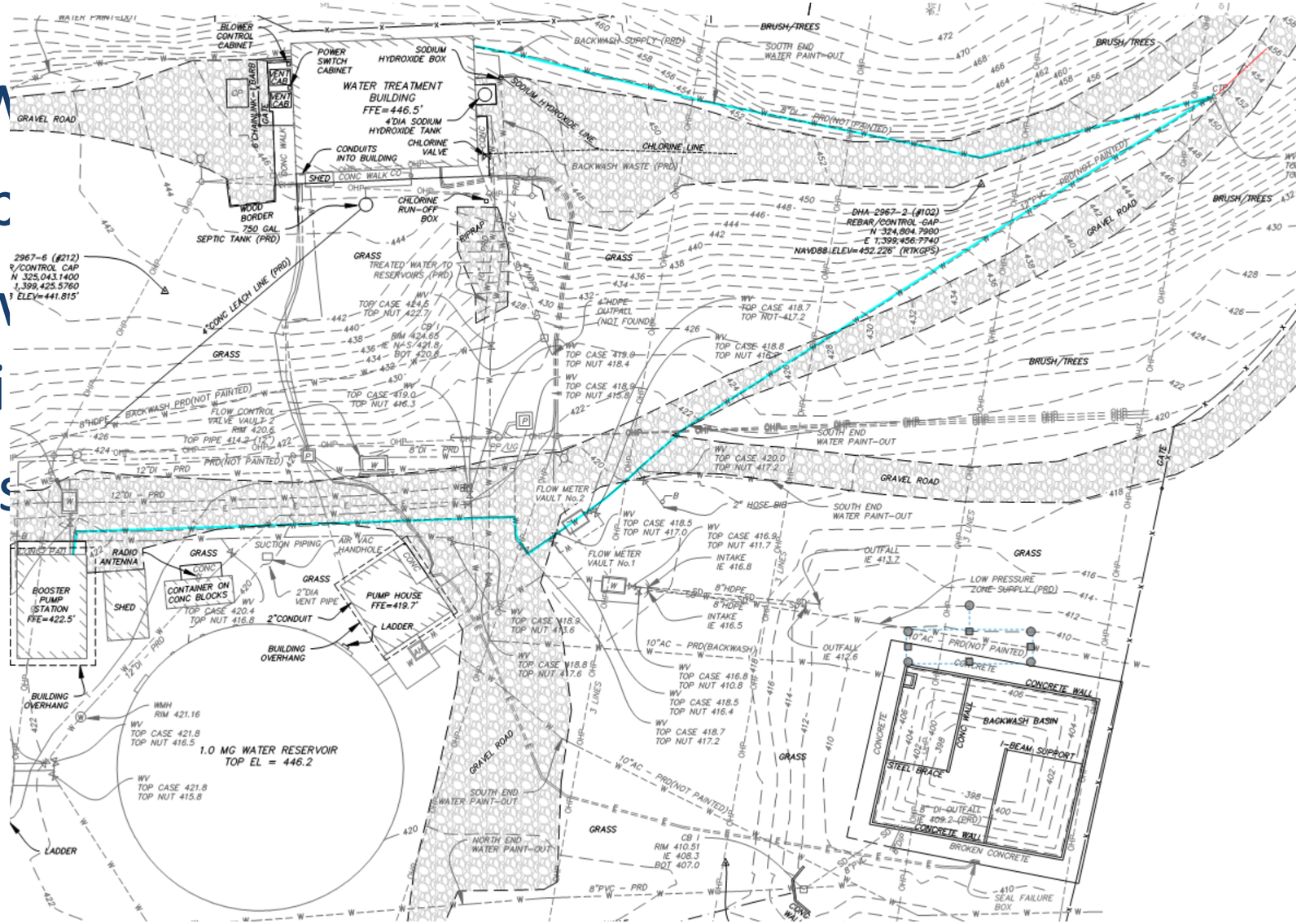

Plant Improvements

Backwash Improvements

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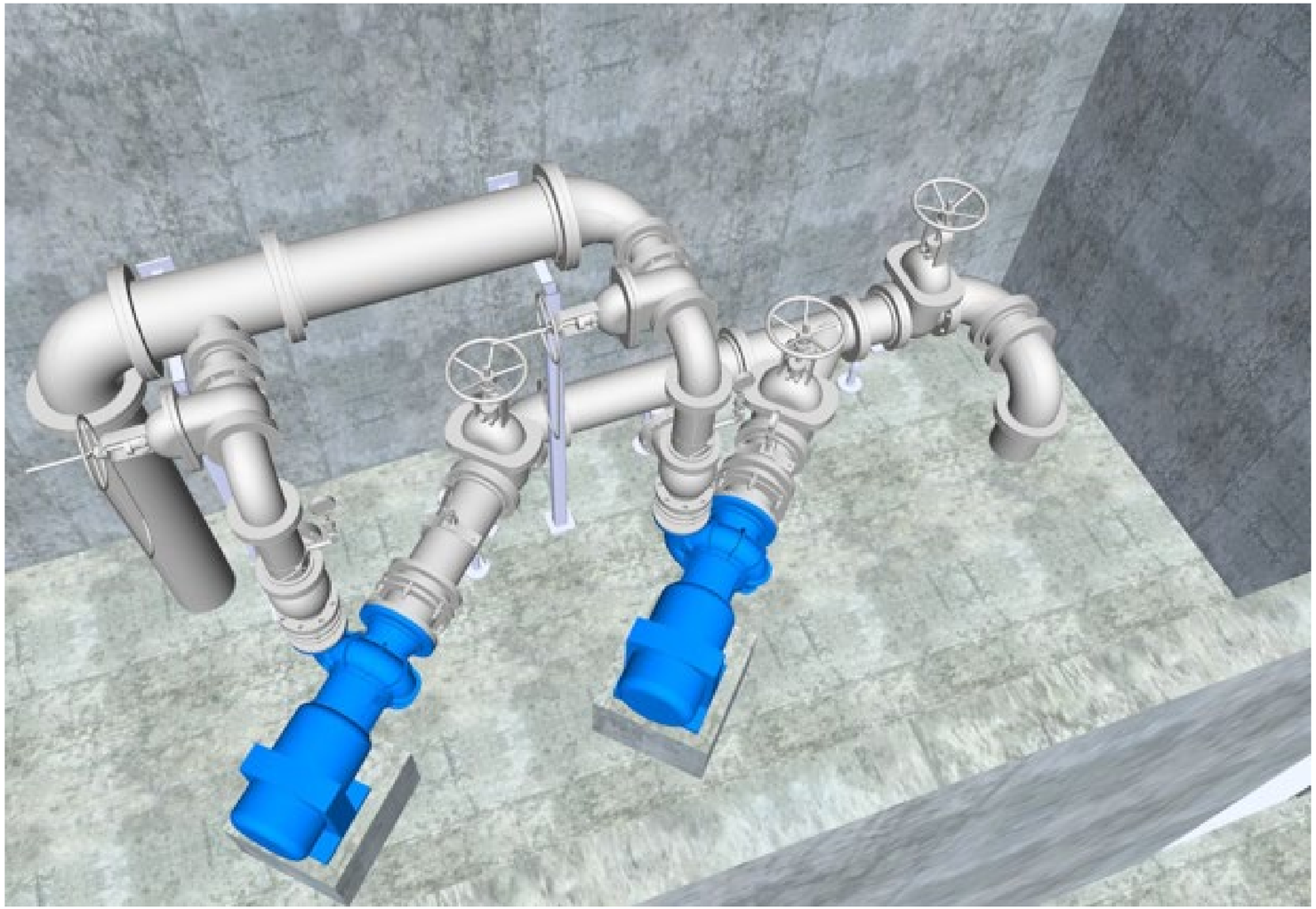
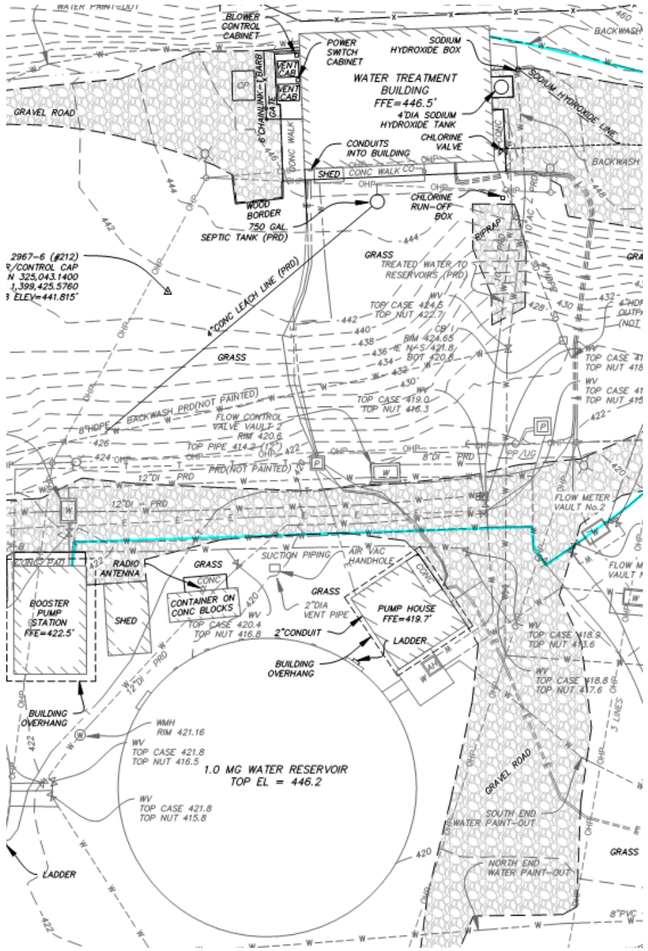


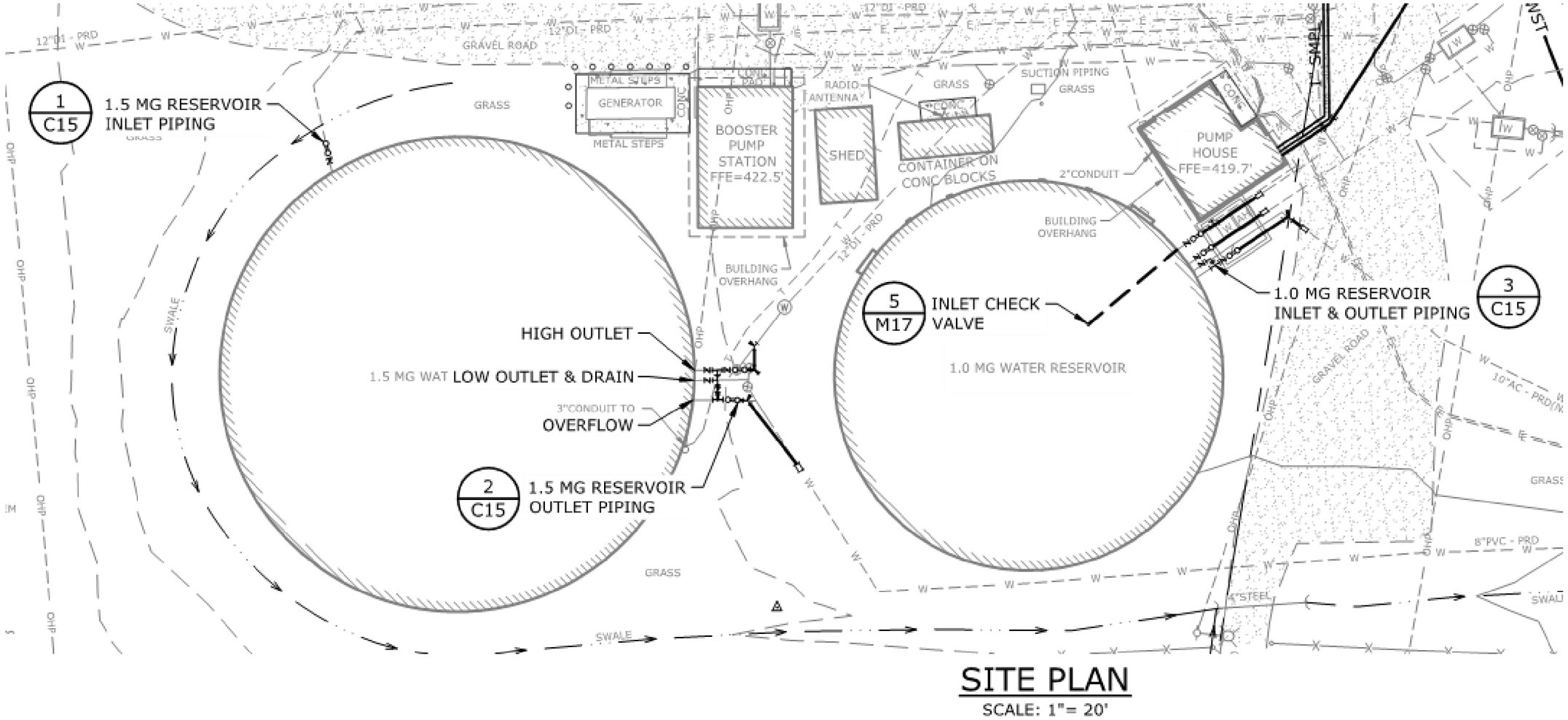
Backwash Improvements - Waste

- Use existing 138,000-gallon backwash waste pond – inspect/reline
- Two new duplex backwash waste pumps
- Eliminate backup gravity backwash waste line



Plant Improvements

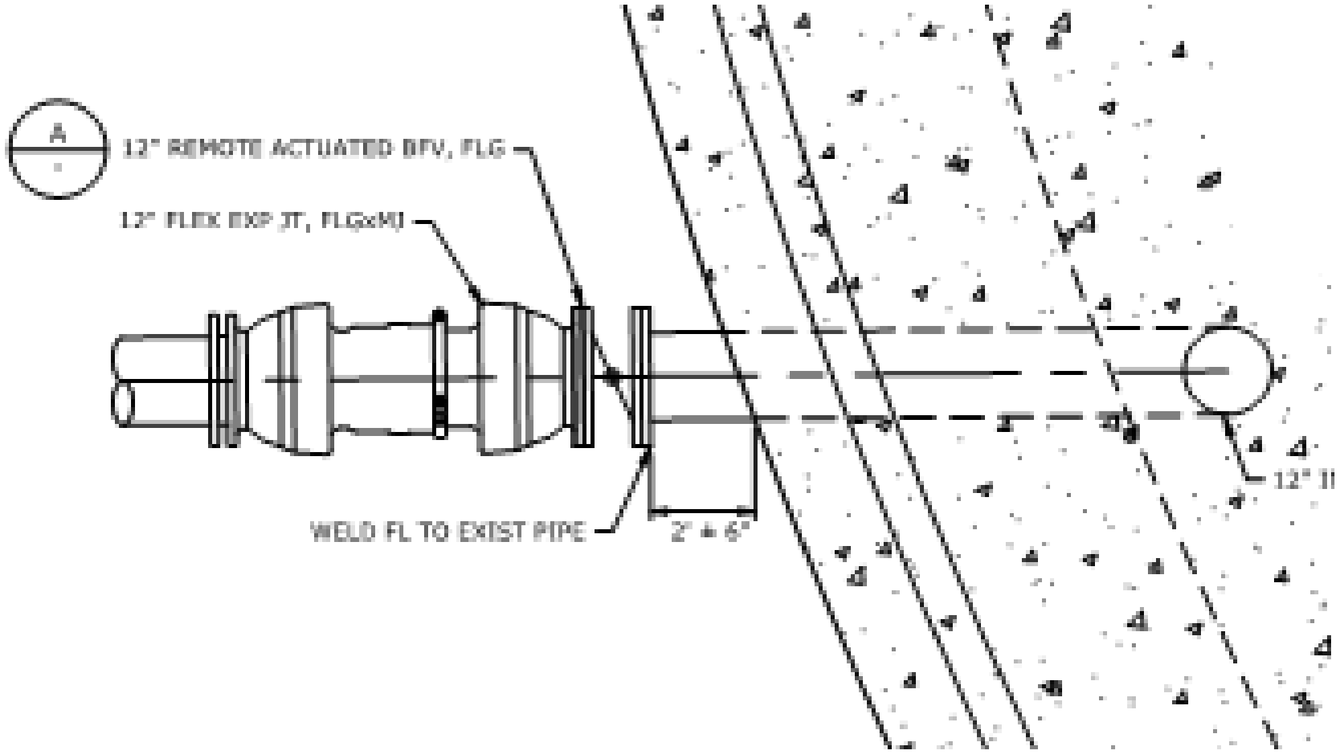
Reservoir Seismic Valves

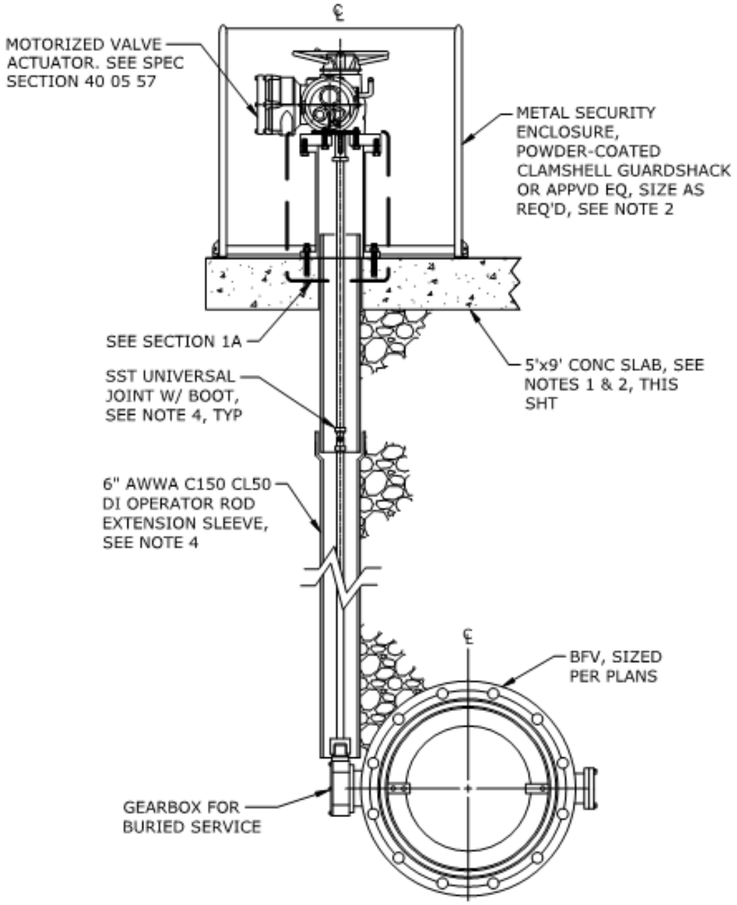


Plant Security and Resiliency

Seismic Valve and FlexTend

Plant Security and Resiliency





Improve Plant Safety

- Card readers on entrance gate/building exterior doors
- Security Cameras
- Alarms on Reservoir access hatches

Plant Safety

DWSRF details

- EPA-administered Drinking Water State Revolving Fund (DWSRF).
- Applications open October 1 – November 30 (2021).
- Maximum Award - $8 million per jurisdiction (2021).
- 20-year loan, 1.75% interest.
- Up to 50% subsidy (then 30 years repayment at 1.25% interest)
- Implementation of the Bipartisan Infrastructure Law (BIL) - $50 billion to water and wastewater. Almost $2B to DWSRF General Supplemental in 2022.
- Surface water treatment is Risk Category 1.

Funding

Proposed Schedule

- Final design – August 2022
- DWSRF Application – November 2022
- Advertise – February 2023
- Start Construction – April 2023

Schedule

Acknowledgements

- WTP Operators – Mike Williams, Jason Strauss, Matt Wood
- Design Team – Industrial Systems (E/I&C), CG Engineering (Structural), the Driftmier Architects, Landau (Geotech), DHA (Survey)
- Murraysmith – Jefferson Moss, Andy Szatkowski, Corey Poland, Xinyi Xu, Harry Marx

Q&A

Thank you!